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ABSTRACT

The goals of the Caltech Population Program are to increase understanding of the interrelationships between population growth and socioeconomic and cultural patterns throughout the world and to communicate this understanding. This series of occasional papers is one step in the process of communicating research results. The papers deal primarily with problems of population growth and the interaction of population change with such variables as resources, food supply, environment, urbanization, employment, economic development, and social and cultural values. Paper Number 1 looks at the deterministic and technicists points of view as they attempt to explain changes in fertility rates. Specific examples of birth rates in Bulgaria, Portugal, and Korea are given. It is contended that the theory of demographic transition (the theory that fertility rates will fall if and only if certain requisite economic and social developments take place) is inadequate to explain these facts. (LS)

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Series 1 Number 1

RECENT LIGHT ON THE RELATION BETWEEN SOCIOECONOMIC DEVELOPMENT AND FERTILITY DECLINE

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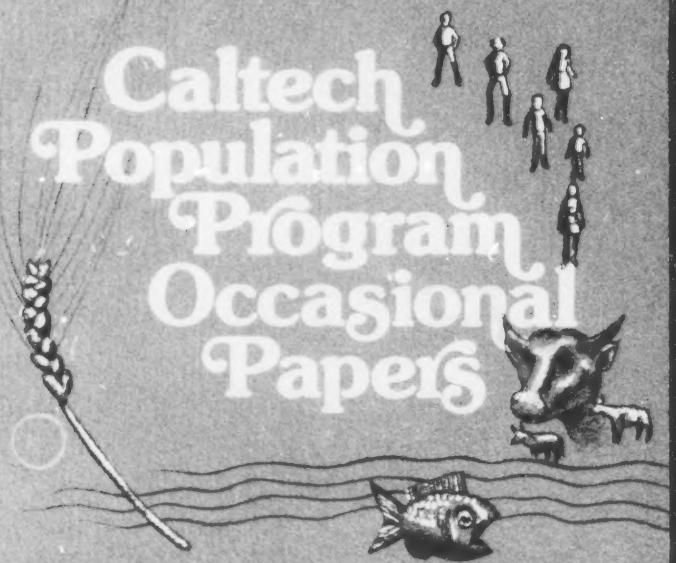

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Caltech Population Program

The Caltech Population Program was founded in 1970 to study the factors influencing population growth and movement. Its goal is to increase our understanding of the interrelationships between population growth and socioeconomic and cultural patterns throughout the world, and to communicate this understanding to scholars and policy makers.

This series of Occasional Papers, which is published at irregular intervals and distributed to interested scholars, is intended as one link in the process of communicating the research results more broadly. The Papers deal primarily with problems of population growth, including perceptions and policies influencing it, and the interaction of population change with other variables such as resources, food supply, environment, urbanization, employment, economic development, and shifting social and cultural values.

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RECENT LIGHT ON THE RELATION BETWEEN SOCIOECONOMIC DEVELOPMENT AND FERTILITY DECLINE

Alan Sweezy

The theory of demographic transition is often held to imply that (a) until socioeconomic development has reached a certain point there is no possibility of a decline in fertility, and (b) once that point has been reached fertility will fall of its own accord. The conclusion obviously is that it is futile to try to influence fertility before the requisite economic and social development has taken place, and unnecessary after. Proponents of this view are particularly scornful of the idea that organized family planning programs might bring about a decline in fertility. The most such programs could possibly do, they maintain, is service a trend toward family limitation. But the trend must be firmly established as a result of deep seated economic and social change for family planning even to be helpful.

In his essay "Egyptian Elite Perceptions of the Population Problem," John Waterbury contrasts the "technicist" with the "determinist" view of how fertility changes can be brought about.

> The determinists—among whom I would probably include myself with some major reservations—argue that family planning programs cannot create interest, demands, or customers but only respond to and service clienteles created by various processes of social change. Without social change, they would contend, there is no use wasting time with technical programs.[1]

This idea has wide appeal both for its apparent intellectual rigor and for the assurance of its policy conclusions. Different determinists emphasize different aspects of development. Alfred

Sauvy, for instance, maintains "the key variable is rising per capita income," while Aziz Bindary thinks the crucial step is "the entry of women, particularly rural women, into remunerative, non-domestic positions in the work force."[1] All of them are rather vague as to just how far development must go before a significant decline of fertility can occur. The usual model is England in the nineteenth century, which implies that industrialization, urbanization, etc., must reach the level they attained in England in the 1870s before fertility can decline, though this is rarely explicitly stated. Actually, recent research—notably by Ansley Coale and his group at Princeton—has shown that fertility decline has taken place under a wide range of social and economic conditions. Coale and his coworkers have brought out the fact that the whole area of southern and eastern Europe has been overlooked in discussion of the demographic transition.[2] The aberrant behavior of fertility in France was, of course, widely known but France was labeled the great exception and then forgotten.

Rather than go through the whole list of eastern and southern European countries, I will use two especially interesting ones, Bulgaria and Portugal, to show how large the degree of freedom is which characterizes the historical relation between fertility decline and socioeconomic development.

Table 1 shows the birth rate in Bulgaria from the turn of the century on. The birth rate fluctuated on a high level until the early 1920s and then began a precipitous decline, which carried it down 25 percent in less than ten years. That this was the beginning of a genuine secular decline and not merely an unusually large fluctuation is shown by the fact that the decline continued in the 1930s and then went still further after World War II. In the brief space of 15 years, Bulgaria had completed the demographic transition from a "premodern" birth rate of 40/1000 to a "modern" rate of 24/1000. Kuczynski points out that, because of an increase in the proportion of women of reproductive age in the population, fertility declined even more than the birth rate. The gross reproduction rate (GRR) which was 3.2 in the decade 1901-10 had dropped to 1.9 in 1929, a decrease of 40 percent compared with the 29.5 percent decline in the birth rate over the same period of time. A GRR of 1.9, Kuczynski notes, is about the same as that of the Scandinavian countries in the second decade of this century.[3]

Following the standard theory of the demographic transition, we should expect to find that Bulgaria had undergone a far-reaching process of industrialization and urbanization in the

Table 1. Fertility in Bulgaria

Years	*Birth rate*	*Gross reproduction rate*
1896-1900	42.1	
1901-05	41.5	3.2
1906-10	42.1	3.2
1911-12	40.9	
1920-21	40.1	
1922-23	39.1	
1924-25	38.3	2.5
1925-26	37.2	
1927	33.1	
1928	32.8	
1929	30.1	1.9
1930-34	30.3	
1935-39	24.2	
1953	20.9	
1963	16.4	
1969	17.0	

Sources: For 1896-1929: R.R. Kuczynski, *Balance of Births and Deaths*, vol. 2 (Washington, D.C.: The Brookings Institution, 1931), pp. 30-34; for 1930-39: *United Nations Statistical Yearbook, 1953*, Statistical Office of the United Nations, Department of Economics (New York: UN Publishing Service, 1953), p. 35; for 1953-69: *United Nations Statistical Yearbook, 1970*, Statistical Office of the United Nations, Department of Economics and Social Affairs (New York: UN Publishing Service, 1971), p. 93.

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period before the fertility decline set in. Actually, nothing could be further from the truth. Table 2 shows that as late as 1934, 2.7 of the 3.4 million "economically active" population were engaged in agriculture. Moreover, of the some 266,000 who were classified as "in industry," 186,000 were handicraft workers.

Bulgaria was overwhelmingly a country of small peasant proprietors. Of the agricultural land, 66 percent was in holdings of 10 hectares or less in 1930 and only 1.6 percent was in holdings of over 50 hectares.[4] Owners and members of their families accounted for 99 percent of the agricultural labor force.[5] Agricultural technology, moreover, was extremely backward: '. . .in 1913 nearly 30 percent of all the plows used in Bulgarian

Table 2. Bulgaria, 1934

Category		*Number*
Economically active population		3,433,103
Agriculture		2,744,927
Proprietors or self-employed	754,078	
Wage earners	141,274	
Unpaid family workers	1,849,575	
Industry		266,405
Handicraft workers	186,200	
Others		421,771

Source: Encyclopedia Britannica, 1959, s.r. "Bulgaria," vol. 4, pp. 366-7

farming were most primitive wooden implements. Twenty years later, in 1934, the wooden plows were still more numerous than the iron ones."[6]

The consumption of energy from commercial sources is, except in the case of countries with large foreign-owned oil or other mining operations, a rough indicator of the degree of economic development. Table 3 shows that Bulgaria was very low in the scale with less than one-tenth of the European average and about one-thirtieth of the consumption of such industrialized countries as Belgium and the United Kingdom. Table 3 shows also that the consumption of energy in Bulgaria and several other eastern and southern European countries in the 1930s was below that of some of the less developed countries today whose fertility is still on a "premodern" level.

How strong the hold of the conventional theory of demographic transition is can be illustrated by Henry David's report on Bulgaria.[7] After pointing out that the Bulgarian birth rate dropped from 25.6 in 1946 to 14.9 in 1966, he goes on to say:

> It is held that the major reasons for the reduced birth rate include: (a) migration from rural to urban centers, (b) more active participation by women in socioeconomic life and industrial production... (e) the recognition that in an industrial society there is lesser need for large families.

Industrialization and urbanization may, of course, have had

Table 3. Energy Consumption and Birth Rate

Country	*Per capita energy consumption**	*Birth rate*
Group A	*1937*	*1935-39*
Belgium	4,020	15.6
Bulgaria	140	24.2
France	2,120	15.1
Greece	180	26.8
Portugal	240	27.1
Romania	370	30.2
United Kingdom	4,280	15.3
Yugoslavia	180	27.9
Group B	*1969*	*1965-69*
Turkey	461	39.6
Tunisia	248	40.6
Mexico	1,044	43.4
Brazil	481	37.8
Peru	623	41.8
Egypt	221	44.1
Colombia	591	44.6

Sources: For energy consumption in 1939: *United Nations Statistical Yearbook 1953*, Statistical Office of the United Nations, Department of Economics (New York: UN Publishing Service, 1953), pp. 276-8; in 1969: *United Nations Statistical Yearbook, 1970*, Statistical Office of the United Nations, Department of Economics and Social Affairs (New York: UN Publishing Service, 1971), pp. 356-9. For birth rates 1935-39: *United Nations Statistical Yearbook, 1953*, pp. 35-6; 1965-69: "Statistics," *Population Index* 37, no. 3 (1971): 287-90

*From commercial sources, in kilograms of coal-equivalent.

something to do with the further decline of fertility after World War II. But this statement overlooks the fact that a major part of the fertility decline had already taken place before Bulgaria had experienced any significant degree of industrialization or urbanization. In this connection it is interesting to note that:

Table 4. Fertility in Portugal, 1900-60

Year	*Birth rate*	*Index of marital fertility (I_g')**
1900	32.1	.70
1910	33.5	.67
1920	31.3	.64
1930	30.2	.54
1940	25.0	.46
1950	25.2	.46
1960	24.3	.44
1940/1900	78%	66%

Source: M. Livi Bacci, *A Century of Portugese Fertility* (Princeton, New Jersey: Princeton University Press, 1971), p. 56
*In the index of marital fertility, I_g has been corrected to eliminate the effects of the unbalance in the sex structure of the married population induced by migration.

> . . .an observer who has traveled extensively in rural Yugoslavia can accumulate enough firsthand evidence to confirm these generalizations about changing values and their impact on family size. Among peasant acquaintances in the Vojvodina, Slovenia, Sumadija and eastern Serbia, inner Croatia, and Slavonia, families with more than two children are exceptions of increasing rarity.[5]

Portugal presents an equally interesting case. Thanks to Massimo Livi Bacci's recently published book, *A Century of Portugese Fertility*,[6] a much more detailed analysis is possible than with the scanty materials I have at hand on Bulgaria. If we look only at the birth rate for the country as a whole we see that the decline from pre- to post-transition levels is very moderate: from roughly 32 in 1900-20 to 25 in 1940 (table 4). It was no higher before 1900 and only slightly lower after 1940, until very recently. But the overall birth rate gives a quite inadequate picture of what was happening to fertility in Portugal. In the first place, as a result of changes in age structure and an increase in the proportion of women who were married, marital fertility, as shown in the second column of table 4, fell more than the birth rate. In 1940 marital fertility was 66 percent of the 1900 level while the birth rate was 78 percent. Secondly, the decline was very

Table 5. Index of Marital Fertility (I_g) by District

Area	*1900*	*1920*	*1940*	*1960*
North				
Braganca	.69	.82	.60	.51
Vila Real	.69	.75	.58	.61
Viana do Castelo	.67	.78	.63	.60
Braga	.70	.78	.68	.76
Porto	.74	.63	.50	.54
Guarda	.80	.75	.60	.48
Viseu	.75	.79	.60	.55
Aveiro	.81	.75	.56	.53
Unweighted average	.73	.76	.59	.57
South				
Portalegre	.66	.62	.38	.27
Evora	.69	.60	.39	.25
Setúbal	---	---	.31	.20
Beja	.67	.61	.43	.30
Faro	.66	.56	.32	.26
Unweighted average (excl. Setúbal)	.67	.60	.38	.27

Source: Livi Bacci, *Portuguese Fertility*, p. 68

uneven for different parts of the country. Table 5 gives the index of marital fertility for the eight northern and five southern districts. Fertility was somewhat lower in the south in the predecline period and then fell much more drastically than in the north. An average of the northern districts in 1940 was still 81 percent of the 1900 level while in the south it was only 57 percent. The striking degree of uniformity of behavior within each of the two areas suggests that we are justified in treating them as units. This conclusion is reinforced by an examination of the economic and social characteristics of the two parts of the country. "...in the north very small farm holdings prevail and are partly responsible for the high emigration rate; in the south—as in Andalusia and Spanish Estremadura—the land is concentrated in a few latifundia (with the exception of the Algarve) and farm laborers constitute a large percentage of the agricultural labor force."[10]

Table 6. Portugal: Regional Indices, 1960

Variables	*North*	*South*
Marital fertility (I_g)	.539	.255
Percentage of illiteracy (males, 25-29)	28	38
Percentage of labor force in agriculture	57	58
Percentage of females in the labor force	18	14
Infant mortality, per 1000	92	70
Percentage babies born without assistance	77	44
Average size (ha.) of farm holdings	2.1	26.2

Source: Livi Bacci, *Portuguese Fertility*, p. 128

Again, as in the case of Bulgaria, we look in vain for evidence of the economic and social development which is supposed to be a prerequisite for a significant drop in fertility. Livi Bacci says of the country as a whole:

> Portugal is still a very backward country, at least in comparison with the other countries of Western civilization and in spite of the improvements of the last decades. Its per capita income is the lowest in western Europe. Illiteracy, infant mortality, and the incidence of infectious diseases are at the highest level. Only in some areas of the Balkans (Albania, Southern Yugoslavia) do conditions similar to those of Portugal still exist."

But what of the different parts of the country? Has the south perhaps become more modernized—more advanced socially and economically—than the north? Table 6 shows that this is definitely not the case. The percentage of the labor force in agriculture is about the same, of females in the labor force slightly less in the south, and illiteracy is much higher in the south. The south does have an edge with respect to infant mortality, which may be related to the fact that fewer babies are born without assistance. Infant mortality is still high, however, in both parts of the country, much higher than in the developed countries and on a par

Table 7. Noncorrelation of GNP to Birth Rate and Infant Mortality

Country	*Birth rate (est. 1970, except as specified)*	*GNP per capita (1968)*	*Infant mortality* (1969)*
Group A			
Korea	30	$180	50
Taiwan	27	270	18
Ceylon	32 (1969)	180	52 (1965-69)
Chile	27 (1968)	480	92 (1968)
Costa Rica	32 (1969)	450	71
Group B			
Turkey	40 (1969)	310	153 (1965-69)
Tunisia	39 (1969)	220	74
Philippines	45 (1965-69)	180	72
Mexico	41	530	68
Colombia	44	310	70 (1968)
Peru	42 (1965-69)	380	62
West Malaysia	37	330	42 (1968)

Sources: 1970 estimated birth rates: R.J. Lapham and W.P. Mauldin, *National Family Planning Programs: Review and Evaluation*, Studies in Family Planning, vol. 3, no. 3 (New York: The Population Council, March 1972), p. 39; other birth rates: "Statistics," *Population Index* 37, no. 3 (1971): 287-90. GNP per capita: *1971 World Population Data Sheet* (Washington, D.C.: Population Reference Bureau, August 1971). Infant Mortality: "Statistics," *Population Index* 37, no. 3 (1971): 293-5 and *1971 World Population Data Sheet* (Washington, D.C.: Population Reference Bureau, August 1971).

*Deaths under one year per 1000 live births

with many of the less developed countries today where fertility has not yet registered a significant decline (table 7).

In 1960 the index of marital fertility, used by Coale and his coworkers at Princeton, ranged from .20 to .30 in the five southern districts of Portugal. It is worth pointing out that this is among the lowest in the world, about the same as for England and Sweden and appreciably below France at that time.

Livi Bacci's attempt at explanation is limited to a comparison of

the north and the south within Portugal. The only difference he can find which might have contributed to the lower fertility of the south is the degree of attachment to religion and tradition.

> The reader has already been repeatedly informed as to the different regional attitudes toward religion. It could be thought that the south, with more secular attitudes, has been receptive to neomalthusian principles, while the north's religiosity and deep attachment to traditions may have erected efficient barriers to the diffusion of voluntary control of fertility.[12]

The implication is that we may do better to seek the explanation of fertility decline in the absence of barriers to the spread of a "natural" desire to limit family size rather than in the development of economic and social conditions which produce a change in the value people place on children. While it still leaves important questions unanswered, this hypothesis seems to me to be a very useful addition to the set of ideas with which we approach the study of fertility change.

In spite of evidence such as that just cited the conventional theory of demographic transition still has a strong hold on the minds of scholars in the field. After considering some of the qualifications that have to be made in the light of modern research, Henry Raulet, in a recent article, sums up what is, no doubt, still the majority view as follows:

> And, in spite of difficulties in pinpointing and measuring causal factors, experience so far *has* shown demographic modernization, i.e., falling fertility, to be a concomitant of all-around modernization and economic development. The bimodal distribution of demographically modern and non-modern countries is alone rather convincing on this point.[13]

I would suggest two major reservations to this conclusion. First, as to the bimodal distribution: while all of the countries listed in the Population Reference Bureau's *1971 World Population Data Sheet*[14] with per capita gross national product of $750 or more have low or moderate birth rates[15] (most of them less than 20) and all of those with per capita GNP of less than $150 have high birth rates (mostly 40 or more), there is a sizable group in between in which no close correspondence between the degree of economic and social development and the level of fertility is to be found. Second, many countries, or major parts of countries, like the

south in Portugal, which are now included in the upper group, had already reached moderate to low levels of fertility at a much earlier stage in their economic and social development. Hence if we were to correlate levels of fertility *when they were first attained* with degree of socioeconomic development we should have to shift them into the intermediate—or perhaps even the bottom—group of countries mentioned above. This would, of course, further weaken the force of the bimodal distribution argument.

Group A of table 7 lists five countries in which fertility has been falling and is now at what could be described as intermediate levels. I have left Singapore, Hong Kong, and some of the islands like Barbados, where fertility has fallen even further, out of the account since they present rather specialized cases. In group B I have picked seven other countries where fertility is still high. I have given two of the most important indicators of economic and social progress, per capita gross national product and infant mortality. It can easily be seen that as far as gross national product goes there is no significant difference between the two groups of countries. Both the average and the range is very nearly the same. I may be accused, of course, of picking the countries in group B so that they would be the same. That misses the point, however. The significant thing is that it is *possible* to pick a group of high fertility countries with essentially the same economic level as that of the countries in which fertility has been falling.

The comparison in terms of infant mortality is somewhat more favorable to group A but even here, except for Taiwan at one extreme and Turkey at the other, there is no great difference between the two sets of countries. Chile actually has higher infant mortality than any of the B group except Turkey, and Costa Rica is on a par with most of them. There is no evidence here of a definite threshold below which infant mortality must fall before significant decline of fertility is possible. This conclusion is strengthened by a comparison of infant mortality rates for a number of southern and eastern European countries shortly before World War II, when their fertility had already declined to moderate levels, with the rates of the group B countries (table 8). Even Turkey is not much out of the range of the infant mortality which proved to be quite compatible with a very significant reduction in fertility.

What conclusions can be drawn about the role of family planning from the foregoing review of past history and recent experience? First, I think it is clear from the history of fertility

Table 8. Southern and Eastern Europe: Birth Rates and Infant Mortality, 1935-39

Country	*Infant mortality*	*Birth rate*
Bulgaria	146	24
Greece	113	27
Hungary	136	20
Italy	103	23
Poland	136	25
Portugal	139	27
Romania	181	30
Spain	125	22
Yugoslavia	139	28

Source: U.N., *Statistical Yearbook, 1953*, pp. 35-6, 44-5

decline in southern and eastern Europe that the economic and social thresholds—if indeed there are any—are very low. Sharp and sustained fertility declines have occurred in countries that were poor, predominantly agricultural, relatively uneducated, and still suffering from high mortality. If they have occurred before there is nothing, at least in these conditions, to keep them from occurring again elsewhere. As I have tried to show, many of the underdeveloped countries with high fertility today can satisfy the conditions for a decline quite as well as the southern and eastern European countries did in the period of their declines. Family planners need not be deterred by the gloomy warnings of the adherents to a socioeconomic determinist view of fertility change.

On the other hand, it is true, of course, that the decline of fertility in southern and eastern Europe took place without assistance from any organized family planning programs. Two quite different conclusions can be drawn from this fact. The first is that, although we cannot specify what economic and social conditions are prerequisites for a decline, we can say that the decline must be spontaneous. To try to precipitate it or speed it up through programs organized for that purpose is futile.

The other conclusion is that since we don't really know what brought about the fertility declines in these countries there is no reason to assume that a family planning program might not itself be an agent of change. Both conclusions are based on essentially negative evidence: the first on the fact that we don't know from history that a conscious program will work, and the second on the

Table 9. Recent Declines of Crude Birth Rates

Country	*1950s or early 1960s*	*Late 1960s or estimated 1970*
Group A		
Korea	43 (1960)	30 (1968)
Taiwan	40 (1960)	28 (1969)
Hong Kong	36 (1961)	21 (1969)
Singapore	43 (1957)	22 (1970)
Ceylon	39 (1953)	32 (1968)
West Malaysia	46 (1957)	37 (1970)
Group B		
Costa Rica	46 (1960-64)	32 (1969)
Chile	35 (1960-64)	27 (1968)
Mauritius	39 (1960-64)	28 (1969)

Sources: Group A: *Studies in Family Planning*, vol. 3, no. 3, p. 52. Group B: *Population Index* 37, no. 3 (July-September, 1971), 287-90.

equally well-established fact that we don't know it won't.

We turn finally to experience with family planning programs to see what light it can shed on this question. As already pointed out a number of countries have registered sharp declines in fertility within the last decade or even less. Table 9 pulls this material together. How rapid the declines have been can be seen by comparing Korea with the U.S. In 1960 the total fertility rate in Korea was 6.2, by 1968 it had dropped to 4.2, a decline of 32 percent. A 6.14 level was reached in the U.S. in 1840 and 4.23 in 1885. In other words, in nineteenth century U.S. it took over forty years for the same fertility decline which has occurred in eight years in contemporary Korea. Most of the countries in table 9 have also had active family planning programs. Can it be demonstrated that the latter have made a significant contribution to the fertility declines?

As might be expected, trying to answer this question has been a favorite sport of the experts in the last few years. Actually, it is impossible to prove definitively that family planning programs either have or have not contributed to the reductions in fertility. The reason is that we can never know for sure what would have happened if the family planning program had not existed. Even if

Table 10. Changes in Korean Total Fertility Rates*

Area	*1960*	*1968*	*Decline (%)*
National	6,150	4,235	31
Urban areas	5,110	3,450	33
Rural areas	6,710	4,780	29

Source: George Worth et al., *Korea/Taiwan 1970: Report on the National Family Planning Programs*, Studies in Family Planning, vol. 2, no. 3 (New York: The Population Council, 1971), p. 60
*Total births per 1000 women by the time they reach age 45

the fertility decline was accelerated right after the family planning program got under way, skeptics can always say it would have been accelerated anyway; conversely, a slowdown is not necessarily proof that the family planning program has been ineffective. It might have slowed down even more or stopped altogether if there had been no program.

We are thus thrown back on what are essentially bits and pieces of evidence that point in one direction or the other. I cite a few from recent experience which lend support to the view that family planning programs have made a contribution to the reduction of fertility.

(1) In Korea from 1960 to 1968 fertility fell by nearly the same amount in rural as in urban areas (table 10). The authors of *Korea/Taiwan* 1970[16] consider this convincing evidence that the family planning program had played a part in the fertility decline. "Without the family planning program, the rural fertility decline could have been only a fraction of the urban decline. Virtually no commercial contraceptive outlets existed in rural areas before the program began, and there are still few; abortion has become common only quite recently.

(2) Freedman and Takeshita point out that in Taiwan there was a significant change in the socioeconomic composition of those using birth control after the program was launched:

> A more important argument for the program's effect is the radical change in the characteristics of those accepting contraception within the program. Our previous analysis has indicated that a strong positive correlation between birth control practice and modernization or social status existed

Table 11. Annual Fertility Rates in Taichung

Group	*In the 3 years prior to first interview (Oct-Dec. 1962)**	*1965*		*1966*	
		*Number**	*Change (%)*	*Number**	*Change (%)*
Acceptors by July 1965	396	92	-77	78	-80
Nonacceptors (who had been non-users prior to first interview)	338	239	-29	222	-34
All married women	303	152	-39	135	-46

Source: Ronald Freedman and John Y. Takeshita, *Family Planning in Taiwan: An Experiment in Social Change* (Princeton, N.J.: Princeton University Press, 1969), p. 299
*Births per 1000 women ages 15-44

before the program began. This relationship disappears for those who are acceptors or for new birth control users outside the program. Apparently the program is effective in reaching low status and traditional couples as well as the more advanced strata. . .[17]

(3) A follow-up survey of a large sample of married women, age 20 to 39, in Taichung showed that fertility dropped much more for those who had entered the program than either for those in the sample who had not or for all married women in Taichung of the same ages (table 11).

Fertility would, of course, be expected to fall as the same group of women became older and, in this case, also because family limitation was spreading outside the program as well as within it. The significant thing is that the fall was roughly twice

It is much too early to attempt to draw up any sort of comprehensive balance sheet of the successes and failures of family planning programs. Except for Taiwan, Hong Kong, and Korea, no countries had even started serious programs before 1965. India and Pakistan did have nominal programs but as John Lewis shows, they were on so small a scale and so lacking in vigorous support as to be practically meaningless."[20] Even when a determined effort has been launched it is likely to take two or three years before a large, efficiently functioning organization can be built up and then several more years before enough experience has been accumulated to begin to assess what effect it may be having on fertility. In addition, there is the lag in the collection and reporting of statistics. We have official birth rates for only a few countries for 1969 and tentative estimates for 1970. That does not allow much time for testing the results of programs begun in 1966-67 or even more recently. A very careful survey of the evidence, both quantitative and qualitative, which is available for twenty countries with national family planning programs is contained in "National Family Planning Programs: Review and Evaluation."[21] Inevitably there are many blank spaces in the evaluation tables, and conclusions—where possible at all—are mostly highly tentative.

In conclusion, I should like to return to my initial subject, namely, the determinist view of fertility change. I am indebted to John Waterbury for a vigorous statement of the thesis that far-reaching economic and social change is a prerequisite for a fertility decline. This change will not come about, he states, until

> (1) women enter the labor force and cease to be an economic liability to the family; (2) until daughters no longer run the risk of bringing ineradicable shame to the family by loss of virginity out of wedlock (as Egyptians say "marriage is a veil"); (3) until mothers-in-law are banished from their role of family manager and advisor on how best to hold a husband (give him sons); (4) until the cost of additional children begins to outweigh whatever labor increment they may bring into the family at an early age (children become producers at an early age, especially in rural Egypt). . .one could go on. Each one of these changes and the implicit sociocultural baseline that would undergo change is not unique to Egypt or to "Islamic" countries. The same syndrome of values and social practice bearing directly upon family roles and fertility is common to many low-income, peasant-based societies of the Third World. And, to the extent

> that the elements in the syndrome are interlocked, change in any one will entail change in all the others—in short a social revolution. In fact, a successful trend in a family planning program may be an indicator of radical social transformation, but it may be illusory to think that a national program could have an impact on one vital aspect of family life without all other aspects of that life style changing apace. As regards Egypt, the tentative evidence is encouraging, for it would appear that the family planning program is indeed servicing a trend toward the voluntary limitation of births.[22]

I would like to suggest two things. First, intensive research on the extent to which these and other—"one could go on"[9]—barriers existed and were overcome in cases such as those of Bulgaria, southern Portugal, Costa Rica, rural Korea and others where notable fertility declines have taken place. Waterbury says explicitly, "Each one of these changes and the implicit socio-cultural baseline that would undergo change is not unique to Egypt or to 'Islamic' countries." Is it true that children had ceased to become producers, that women were entering the labor force in much greater numbers, and that mothers-in-law had been banished from their traditional role? The facts I have cited earlier in this paper about some of these countries suggest the need for considerable caution in concluding that changes, at least of a sweeping nature, had taken place.

My second suggestion is that we examine more carefully the agents of social change. Waterbury assumes that fertility control—whether exercised spontaneously on the family level or brought about through an organized program—must necessarily be a following rather than a leading sector. Do we really know that this is true? The usual assumption is that the leading sectors are industrialization, urbanization, improved health conditions, with a concommitant fall in mortality, and that changes in social relations and in attitudes are consequences of changes in these more "basic" determinants. I think the examples of Bulgaria, Portugal, and other eastern and southern European countries show that this is not necessarily true. We must search for other ways in which changes in attitudes may come about. And I think it is important that we at least allow for the possibility that the spread of the idea that family limitation is possible and advantageous from the individual family point of view may be one of these. Perhaps the discussion of *goli* and *chala* by the villagers in Pakistan will lead to a significant modification of their behavior just as

some unrecorded discussions (or were they only individual thoughts?) did among the landless laborers of southern Portugal or the small peasant proprietors of Bulgaria between 1920 and 1940.

Notes

1. John Waterbury, "Egyptian Elite Perceptions of the Population Problem" Field Staff Reports, vol. 18, no. 3 (Hanover, N.H.: American Universities Field Staff, 1973).
2. Ansley Coale, "The Decline of Fertility in Europe from the French Revolution to World War II," *Fertility and Family Planning: A World View*, ed. S.J. Behrman, Leslie Corsa, and Ronald Freedman (Ann Arbor: University of Michigan Press, 1969).
   A striking example of early fertility decline in a predominantly agricultural area is given by Paul Demeny in "Early Fertility Decline in Austria-Hungary. A Lesson in Demographic Transition," *Daedalus* 97, no. 2 (1968): 502-23. Referring to seven Hungarian provinces that "form an unbroken string, stretching along the north bank of the rivers Drava and Danube in what was then southern Hungary," he says that the area "was and has remained predominantly agricultural. The lack of urban-industrial development in the area suggests that the single most important factor regularly invoked in explanations of transition is inapplicable here. In fact, it can be positively shown that the decline of fertility originated and developed in and among the peasantry" (pp. 518-19).
3. R.R. Kuczynski, *Balance of Births and Deaths*, vol. 2 (Washington, D.C., The Brookings Institution, 1931), p. 32.
4. W.E. Moore, *Economic Demography of Eastern and Southern Europe* (New York: Arno Press, 1972), p. 82.
5. Moore, *Economic Demography*, p. 252.
6. Alexander Gerschenkron, *Economic Backwardness in Historical Perspective*, "Some Aspects of Industrialization in Bulgaria" (New York: Praeger, 1962), p. 216.
7. Henry P. David, *Family Planning and Abortion in the Socialist Countries of Central and Eastern Europe* (New York: The Population Council, 1970), p. 63.
8. Dennison Rusinos, "Yugoslavia," in *Population: Perspective, 1971*, ed. Harrison Brown and Alan Sweezy (San Francisco: Freeman, Cooper and Company, 1972), pp. 269-88.
9. Massimo Livi Bacci, *A Century of Portuguese Fertility* (Princeton: Princeton University Press, 1971).
   This book is announced by the Office of Population Research, Princeton University as "the first in a projected series on the decline of European fertility."
10. Livi Bacci, *Portuguese Fertility*, pp. 128-9.
11. Livi Bacci, *Portuguese Fertility*, p. 3.
12. Livi Bacci, *Portuguese Fertility*, p. 129.
13. Henry Raulet, "Family Planning and Population Control in Developing Countries," *Demography* 7, no. 2 (May 1970): 216.
14. *World Population Data Sheet* (Washington, D.C.: Population Reference Bureau, August 1971).
15. Libya and Kuwait are exceptions, clearly because of their oil revenues.
16. George Worth et al., *Korea/Taiwan 1970: Report on the National Family Planning Programs*, Studies in Family Planning, vol. 2, no. 3 (New York: The Population Council, 1971), p. 60.

17. Ronald Freedman and John Y. Takeshita, *Family Planning in Taiwan: An Experiment in Social Change* (Princeton, N.J.: Princeton University Press, 1969), p. 309.
18. Alfredo Goldsmith et al., *Chile*, Country Profiles (New York: The Population Council, October 1970), p. 7.
19. *New York Times*, July 16, 1972, p. 14, column 3.
20. John Lewis, "Population Control in India," *Are Our Descendants Doomed?*, eds. Harrison Brown and Ed Hutchings (New York: Viking Press, 1972) pp. 243-65.
21. R.J. Tapham and W. Parker Mauldin, *National Family Planning Programs: Review and Evaluation*, Studies in Family Planning, vol. 3, no. 3 (New York: The Population Council, March 1972).
22. John Waterbury, *Manpower and Population Planning in the Arab Republic of Egypt: Population Review: 1971*, Field Staff Reports, vol. 17, no. 2 (Hanover, N.H.: American Universities Field Staff, 1972), pp. 17-18.

The Author

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